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Comparative Analysis of Rural Development

—Rice-Growing Villages in Thailand and Malaysia—

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Introduction

This paper reports a hasty review of a series of tables which derive from a field survey conducted in 1976.¹⁾ The purpose of the presentation is threefold: (1) to provide comparable data on environment, rice technology, and farm economy; (2) to analyze the living standards of peasant farmers who live in different ecological areas and have developed different patterns of rice cultivation; (3) to identify the effects of new rice technology upon socio-economic aspects of rural life, which may at the same time be influenced by urbanization or industrialization. In brief, the paper attempts to explore a basic approach for anthropologists who are interested in the scientific study of rural development in cross-cultural comparative perspective.

Rural development in general covers a wide range of problems of peasant life. The scope of this study includes peasants' adaptation to the natural environment, rice cultivation and farm economy, patterns of economic adaptation, and the social consequences of these processes on traditional patterns of peasant community. Thus it is concerned with an analysis of the changing aspects of peasant communities rather than the component- and consequence-analysis of high yielding varieties *per se*.²⁾ However, since materials are quite limited, the paper does not intend to analyze the process of change itself, but instead confines itself to identifying emerging trends.

The field survey was conducted in six rice-growing villages of Thailand and three in Malaysia, which were selected on the basis of physiographic characteristics as representative of different regions of the respective country. The administrative location of these villages is as follows:³⁾ in Thailand, (1) Don Daeng (M2), Tambon Don Han, Amphur Muang, Changwat Khon Kaen [156; 154 & 2; 20]; (2) Khok Chyak (M9), Tambon Taan Diaw, Amphur Kaeng Khoi, Changwat Saraburi [118;

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- 1) The field survey was supported by the Ministry of Education, Japan, under the project: "the Role of Education in the Rural Development of Southeast Asia." The present paper constitutes a part of the preliminary reports, and all the tables used are the result of data obtained through the joint work of Drs. S. Ichimura, K. Mizuno, H. Tsujii, T. Tomosugi, M. Kuchiba, Y. Murata, and L. Fredericks.
- 2) See for example, *IRRI Annual Report for 1975* (IRRI: Los Banos, 1975); and *Changes in Rice Farming in Selected Areas of Asia*, IRRI: Los Banos, 1975.
- 3) Figures in parentheses indicate the total number of village households; the total number of farm households & that of non farm households; the number of samples interviewed.

100 & 18; 18]; (3) Samkaphong (M7), Tambon Saraphi, Amphur Saraburi, Changwat Chieng Mai [88; 62 & 26; 18]; (4) Yamani (M7), Tambon Ongkharak, Amphur Pho Thong, Changwat Ang Thong [57; 39 & 18; 16]; (5) M7., Tambon Wangyang, Amphur Sri Prachan, Changwat Suphan Buri [142; 129 & 13; 20]; (6) M12., Tambon Kubang Luang, Amphur Laad Lum Kaew, Changwat Pathum Thani [59; 53 & 6; 17]; and in Malaysia, (7) Kampung Padang Lalang, Mukim Padang Lalang, Daerah Kota Star, Negri Kedah [182; 166 & 16; 28]; (8) a village in Mukim Tanjong Karang, Daerah Kuala Selangor, Negri Selangor [—; —& —; 39]; (9) Kampung Galok, Daerah Cetok, Jajahan Pasir Mas, Negri Kelantan. All the villages were surveyed in July and August, 1976, except the last one, Galok, which is to be interviewed in the near future and therefore does not appear in this article. Households for interview were chosen at random.

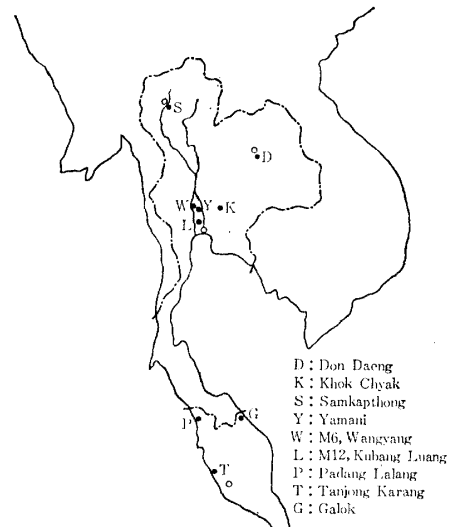


Fig. 1 Location of the Villages Surveyed

I Man and Environment

Wet-rice cultivation is primarily dependent on water availability and land fertility, which may be natural or modified by human devices to various degrees. This permits one to identify four patterns of ecological adaptation among the nine villages, according to man's ability to control the physical environment (Table 1).⁴⁾

Group [I] employs the rainfed TV single-cropping system, and is represented by Don Daeng and Khok Chyak in Thailand, and Galok in Malaysia. The physical environments of these villages differ, but the geomorphological effect upon water conditions is very similar. And, since irrigation is lacking or quite limited both in size and efficiency, the fields have always suffered from water deficiency. The soil is generally sandy and poor.

4) This classification is tentative. TV stands for traditional variety and HYV for high-yielding variety of rice. Full accounts of environmental conditions in different regions of Thailand and Malaysia are found in such works as: Y. Takaya, "Physiography of Rice Land in the Chao Phraya Basin;" H. Fukui, "Environmental Determinants Affecting the Potential Dissemination of High Yielding Varieties of Rice;" Y. Kaida, "Agro-Hydrologic Regions of the Chao Phraya Delta;" K. Kyuma and K. Kawaguchi, "An Approach to the Capability Classification of Paddy Soils in Relation to the Assessment of their Agricultural Potential", all of which can be found in *Southeast Asia: Nature, Society and Development* ed. by S. Ichimura (Honolulu: University Press of Hawaii, 1977); and Y. Fujioka, "Irrigation and Drainage Projects in Malaya (in Japanese)", *Southeast Asian Studies*, vol. 6, no. 2, (Kyoto University), 1968; and K. Kawaguchi and K. Kyuma, *Lowland Rice Soils in Malaya*. (Kyoto: Center for Southeast Asian Studies, 1969)

Table 1. Patterns of Ecological Adaptation

—Rice-Growing Villages in Thailand and Malaysia—(annual, (1975/76))

	T H A I L A N D		M A L A Y S I A	
[I] Single-Cropping [Rice-Fed; Low Fertility]	Don Daeng (Main Season TV) 1.2-38-100 Khok Chyak (Main Season TV) 1.8-93-175	Plateau; Lowland & Valley Fna-Terrace Complex; Upper Portion	Galok (Main Season TV)	Riverine Terrace; Rolling Terrain
[II] Unstable Double-Cropping [Inadequately Controlled; Relatively High Fertility]	Samkaphong TV & HYV 1974-193) 2.5-30-130	Interm Basin; Alluvial Plain		
[III] Stable Double-Cropping [Well Controlled; Medium Fertility]	Yamani (IV & HYV 1973-162) 4.9-135-212 M6. Wangyang (TV & HYV 1964-190) 5.3-199-236	Old Delta; Natural Levee Old Delta; Natural Levee	Tanjong Karang (LI over Two Seasons-200) 5.3-93-244	Coastal Plain; Sandy Terrain
[IV] Unusually Effective [Efficiently Controlled] [High Fertility]	M12. Kubang Luang (Off-Season HYV only 1967-100) 3.8-268-328	Young Delta; Back Swamp	Padang Lalang (HYV over Two Seasons 1971-199) 1.4-293-430	Coastal Plain; Lagoonal Portion

Figures in parentheses : earliest year of HYV's introduction-multiple cropping index;

Figures under parentheses : yield of rice (annual, ton per hectare)—net return from paddy (per head)—per capita income (US\$, farm household only).

The three other groups employ the double-cropping system or a modification of it, under which Thai peasant farmers cultivate TVs in the main season and HYVs in the off-season, and their Malay counterparts use HYVs in both seasons. Samkapthong in Group [II] has practiced double-cropping on the alluvial plain of an intermontane basin since before the Second World War. But the system seems to be unstable, because traditional irrigation cannot adequately control the flooding which arises from deforestation of surrounding higher lands which has taken place, especially during the past ten years. Group [III] has a stable double-cropping system with the assistance of government-sponsored irrigation projects. The rice fields of Yamani and M6 Wangyang are situated on natural levels in the old delta and benefit from gravity irrigation fed by the main branches of the Chao Phraya River. Tanjong Karang, on a sandy coastal plain, is also well irrigated by water which is drawn from the upper reaches of the Bernam River. The soil of villages in this group is medium in fertility. Group [IV] displays the highest form of ecological adaptation using modern technology, although M12 Kubang Luang has developed a system different from that of Padang Lalang. Villagers in Kubang Luang grow HYVs in large areas only during the off-season by pumping water up from canals;⁵⁾ while those in Padang Lalang practice intensive double-cropping which benefits from the Muda irrigation project. The soil of both these villages is fertile, the former lying in a back swamp of the young delta, and the latter in the lagoonal portion of a coastal plain.

Table 2 indicates the average yield of paddy and estimated input of chemical fertilizer per hectare. The figures disclose yield differentials in accordance with the four patterns of ecological adaptation: Group [I] produced 1.2–1.8 tons/ha.; Group [II], 2.5 tons/ha.; Group [III], 4.9–5.3 tons/ha.; and Group [IV], 3.8 (Kubang Luang) and 10.4 (Padang Lalang) tons/ha. The net paddy yield is shown in Table 3: Group [I], 1.1–1.4 tons/ha.; Group [II], 1.4 tons/ha.; Group [III], 3.1–3.5 tons/ha.; and Group [IV], 2.3 (Kubang Luang) and 6.5 (Padang Lalang) tons/ha.⁶⁾ The net return in US\$ is given in the last column of Table 3; the unit price of paddy is about one and half times higher in Malaysia than Thailand.

Higher yield and land productivity correspond to ecological adaptation with more advanced technology. The dissemination of HYVs is related not only to purely techno-ecological factors but also to the time lapse since their first appearance, government extension services, and the peasants' attitude toward agriculture. HYVs are not widely cultivated in Samkapthong and Yamani, and their yield there differs little

5) The reasons for abandoning main season cultivation lie in the problems of labor and time shortage during August, which have arisen from adaptation to the particular natural environment of this region (Prasert Yamklingfung; "General Information on Villages No. 11 & 12. Tambon Kubang Luang," mimeograph, 1973)

6) The figures for Group [II] are lower than usual, since Samkapthong suffered a total crop failure in the main season because of flood damage; those for Kubang Luang in Group [IV] are relatively low, because the harvest derives only from off-season cropping.

Table 2. Rice Field, Production, and Yield in Paddy

—Villages in Thailand and Malaysia—(aual, 1975/76)

(ha.; ton; & US\$)

Samples		Holding per Farm Household	Production per Farm Household	Yield per ha.	Value per ha.	Unit Price per ton
Don Daeng	[18]	2.01	2.506	1.247 (0)	120	96
Khok Chyak	[17]	3.78	6.806	1.801 (71)	214	119
Samkapthong	[12]	1.23	3.125	2.541 (20)	218	86
Yamani	[11]	2.04	10.064	4.933 (120)	524	106
M6. Wangyang	[11]	2.64	14.070	5.330 (238)	579	109
M12. Kubang Luang	[12]	7.44	28.625	3.847 (264)	417	108
Padang Lalang	[23]	1.64	17.189	10.487 (499)	1,632	155
Tanjong Karang	[39]	0.97	5.162	5.322 (532)	917	172

Figures in parentheses: estimation of fertilizer applied (kg. per hectare).

Table 3. Land Productivity in Rice Cultivation

—Villages in Thailand and Malaysia—(annual, 1975/76)

(US\$ per ha.)

Samples		Gross Revenue	Expenditures						Total	Net Return
			Chemicals	Main- tenance	Hired Labor	Rent	Tax etc.	Others		
Don Daeng	[18]	120	0	1	8	4	—	—	13	107 (1.115)
Khok Chyak	[17]	214	13	2	24	10	1	—	50	164 (1.378)
Samkapthong	[12]	218	3	1	46	48	1	1	100	118 (1.372)
Yamani	[11]	524	25	11	103	24	1	10	174	350 (3.302)
M6. Wangyang	[11]	579	56	41	68	31	2	5	203	376 (3.450)
M12. Kubang Luang	[12]	417	54	36	29	47	1	1	168	249 (2.305)
Padang Lalang	[23]	1,632	123	11	397	78	13	—	622	1,010 (6.516)
Tanjong Karang	[39]	917	145	25	130	16	12	63	391	526 (3.053)

Figures in parentheses: amount of paddy equivalent to the net income.

from that of TVs; whereas in M6 Wangyang and M12 Kubang Luang there has been more successful dissemination of HYVs, for they produce 1.5 times more than TVs by means of steady fertilizer inputs and better management. In Thailand, since HYVs have been adopted mostly as off-season crops, the increase in yield and productivity can be attributed primarily to the development of off-season cultivation associated with HYVs. In Malaysia, Padang Lalang and Tanjong Karang display successful dissemination of HYVs (or local improved in the latter) in both seasons, which would be anticipated from the high level of fertilizer input and management.⁷⁾ Yet in Padang Lalang, HYVs produce only 1.3 times more than TVs. The increase of yield and productivity in Malaysia derives from the multiple effect of more intensive cultivation of HYVs and the doublecropping system.

II Household Economy

The higher yields and productivity of rice would be expected to lead to an increase in household income. But income is in fact also determined by several other factors such as land holding, land utilization, off-farm economic activities, labor employment, and urbanization or other features of national development.

First of all, household income from rice cultivation depends on the size of holding as well as yield and productivity. It differs among villages within each country, and broadly speaking, Thai peasant farmers work a larger area of land than their Malaysian counterparts. The difference in holding size brings about noticeable variation in gross output of paddy per farm household among the villages of the four groups. In Group [IV], each household in M12 Kubang Luang produced an average of 28.8 (17.1) tons of paddy, while Padang Lalang it produced only 17.3 (10.7) tons.⁸⁾ These figures reverse the order for annual yield of the two villages. In Group [III], where annual yield is almost the same for all three villages, households in Yamani produced 10.1 (6.7) tons of paddy on average, and in M6 Wangyang, 14.0 (9.1) tons, whereas those in Tanjong Karang produced only 5.2 (3.0) tons. Samkapthong in Group [II] produced 3.1 (1.7) tons per farm household, which is an exceptionally low figure for a double-cropping village, and is due to the small holdings and a total failure in the main season. Lastly, in Group [I], Khok Chyak harvested 6.8 (5.2) tons per farm household, and Don Daeng 2.5 (2.2) tons. The gross and net production of paddy per household in Samkapthong and Tanjong Karang is lower than that of Khok Chyak which relies largely on traditional rice cultivation methods.

7) Expenditure for chemicals, maintenance, and hired labor takes 33 percent of gross income in these villages; 29 percent in M6 Wangyang and M12 Kubang Luang; and less than this in Samkapthong and Yamani (Table 3).

8) Figures in parentheses indicate net production of paddy per farm household. All figures in this paragraph derive from the third, fourth, and twelfth columns of Table 4.

Net income from paddy in US\$ appears in parentheses in the last column of Table 4. In per capita terms, the figures are as follow. Group [IV] has the highest per capita income; that is, US\$ 293 for Padang Lalang and US\$ 268 for M12 Kubang Luang. Two villages in Group [III] come next; US\$ 199 for M6 Wangyang and US\$ 135 for Yamani. The income of people in Tanjong Karang is the same as that of Khok Chyak in Group [I], US\$ 93. Samkaphong in Group [II] may be classified in the same category, although per capita income in the survey year was only US\$ 30 because of the total failure of the main season crop. Don Daeng in Group [I] has a per capita income of US\$ 38, which represents the subsistence level of rice cultivation in Thailand. The subsistence level figure is probably about US\$ 60 in Malaysia because of the higher unit price for paddy.⁹⁾

It can be assumed that Don Daeng represents a subsistence level of rice cultivation; Khok Chyak, Samkaphong, Yamani, and Tanjong Karang represent a semi-commercial level;¹⁰⁾ and M6 Wangyang, M12 Kubang Luang, and Padang Lalang have developed commercialized rice cultivation.

In the villages which still remain at the subsistence or semi-commercial level of rice cultivation because of small holdings and/or low productivity, peasant farmers tend to engage in other farming activities to increase their cash income. For example, most Don Daeng farmers own small patches of upland fields in which they plant kenaf and cassava; many farmers in Khok Chyak travel far from the village to cultivate maize on hillsides; villagers of Samkaphong, which is very close to a city, grow vegetables to sell in the market; and Tanjong Karang produces a lot of tree crops such as coconuts, palm-oil fruits, and coffee. Income from this sort of activity amounts to 35–49 percent of the income from paddy in the above villages; and only 8–18 percent in the villages which produce rice primarily as a commercial crop. Yamani is an exception and is not included here. Income from farming per farm household is shown in the last column of Table 4.¹¹⁾

Thirdly, off-farm economic activities have a great influence on household income. In fact, in all the villages surveyed, off-farm income is higher than income from non-rice farming activities, although its contribution to household income differs from one village to another (Table 3 & 4).¹²⁾ In the villages of Group [IV] and in M6

9) The percentage of net income from paddy to the total farm income is as follows: 85 percent in Padang Lalang and 94 percent in M12 Kubang Luang; 93 percent in M6 Wangyang and 97 percent in Yamani; 66 percent in Tanjong Karang, 74 percent in Khok Chyak; and 58 percent in Samkaphong; and 65 percent in Don Daeng.

10) Since space is limited, Yamani is placed for the moment in this category, with no detailed account.

11) The percentage of farm income to the total household income is as follows: 80 percent in Padang Lalang and 87 percent in M12 Kubang Luang; 91 percent in M6 Wangyang and 66 percent in Yamani; 58 percent in Tanjong Karang, 72 percent in Khok Chyak, and 39 percent in Samkaphong; and 58 percent in Don Daeng.

12) The percentage of off-farm income to the total household income is as follows: 20 percent in Padang Lalang and 13 percent in M12 Kubang Luang; 9 percent in M6 Wangyang and 34 percent in Yamani; 42 percent in Tanjong Karang, 28 percent in Khok Chyak, and 61 percent in Samkaphong; and 42 percent in Don Daeng.

Table 4 Farm Income —Villages in Thailand and Malaysia—(annual, 1975/76)

(US\$ per Farm Household)

Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue							Expenditures	Net Income
			Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others	Total		
Don Daeng [18]	2.64 (1.94)	2.68 (2.01)	242	62	51		6	22	384	54 (27)	329 (215)
Khok Chyak [17]	3.30 (2.49)	5.44 (3.78)	810	291	2		8	8	1,119	284 (191)	835 (619)
Samkapthong [12]	0.24 (0.24)	1.27 (1.23)	267		109			15	391	139 (122)	252 (145)
Yamani [11]	0.95 (0.92)	2.07 (2.04)	1,067		10			29	1,107	369 (356)	738 (712)
M6. Wangyang [11]	2.31 (2.26)	2.65 (2.64)	1,529		45		42	101	1,717	644 (536)	1,073 (993)
M12. Kubang Luang [12]	2.12 (1.81)	7.98 (7.44)	3,109		36		45	94	3,280	1,315 (1,254)	1,965 (1,851)
Padang Lalang [23]	1.60 (1.60)	1.64 (1.64)	2,678				127	172	2,977	1,021 (1,021)	1,951 (1,657)
Tanjong Karang [39]	2.32 (0.87)	2.46 (0.97)	893		4	216		44	1,157	381 (380)	776 (513)

Figures in parentheses refer to rice cultivation only.

Table 5. Income of Farm Household

—Villages in Thailand and Malaysia—(annual, 1975/76)

(US\$ per Farm Household)

Samples	Family Size	Labor Force	Farm Income	Off-Farm Income						Household Income	Per Capita Income
				Salary	Agricultural Labor	Factory & Other Labor	Trade & Services	Other	Total		
Don Saeng [18]	5.67	3.61	329		13	217	6		236	565	100
Khok Chyak [17]	6.65	4.21	835		73	254	1	1	330	1,165	175
Samkapthong [12]	4.92	2.50	252	239	3	117	33		392	644	130
Yamani [11]	5.27	2.82	738		13	315	50		378	1,116	212
M6. Wangyang [11]	5.00	3.32	1,073		72	22		13	107	1,180	236
M12. Kubang Luang [12]	6.92	4.42	1,965		54	249	4		307	2,272	328
Padang Lalang [23]	5.65	3.43	1,951	164	189	48	80		481	2,432	430
Tanjong Karang [39]	5.49	2.77	776		369	157	35	4	565	1,341	244

Wangyang of Group [III], where peasant farmers concentrate their labor on commercial rice cultivation, income from off-farm economic activities is equivalent to only about 12–27 percent of the income from paddy. Peasant farmers who practice subsistence or semicommercial rice cultivation, depend on off-farm income amounts to 53 percent of the income from paddy in Khok Chyak and Yamani; 101 percent in Don Daeng; 110 percent in Tanjong Karang; and 201 percent in Samkapthong (unusually high in the survey year.)

Another general trend is that sources of off-farm income differ among the villages of Group [III] and [IV]. In Malaysia agricultural labor constitutes a substantial source of off-farm income, to a much greater extent than in Thailand; of the Thai villages, M6 Wangyang has a relatively high figure (Table 5, sixth and tenth columns). That is, agricultural labor contributes about 39.3 percent of total off-farm income in Padang Lalang, 65.3 percent in Tanjong Karang, and 67.3 percent in M6 Wangyang, and much less in Yamani and M12 Kubang Luang. The reasons for these differences lie in the degree of mechanization, modes of labor demand, and patterns of mutual help in agriculture.¹³⁾

Total household income falls into groups which coincide with the four technologically defined groups (Table 5, eleventh column). And terms of per capita income these also correspond, Group [I] has per capita income of US\$ 100 to 200 (100\$ for Don Daeng and 175\$ for Khok Chyak); Samkephthong in Group [II] has US\$ 130 (much less than in a normal year); Group [III] has 200 to 300 US\$ (212\$ for Yamani, 236\$ for M6 Wangyang, and 244\$ for Tanjong Karang); and Group [IV], more than US\$ 300 (328\$ for M12 Kubang Luang and 430\$ for Padang Lalang). The aggregate effect of adoption of HYVs and double-cropping (including off-season specialization) is more clearly seen when income from paddy and agricultural labor alone are taken into account. The figures per capita are as follows: Group [I], US\$ 40 for Don Daeng, and US\$ 104 for Khok Chyak; income in Samkapthong, Group [II], is extremely low because of instability, only US\$ 30; Group [III], US\$ 135 for Yamani, US\$ 161 for Tanjong Karang, and US\$ 213 for M6 Wangyang; and Group [IV], US\$ 275 for M12 Kubang Luang and US\$ 327 for Padang Lalang.

III Socio-Economic Differentiation

The foregoing accounts of farm economy only correspond to the average, and do not illustrate the reality of socio-economic change brought by adoption of HYVs and double cropping. Land tenure is the crucial factor in further analysis. Table 6

13) For example, tractor ownership is higher in Thailand than in Malasia: 36 percent in Yamani, 46 percent in M6 Wangyang, and 83 percent in M12 Kubang Luang; but only 17 percent in Padang Lalang. There are no tractor owners among the sample households of the other villages.

provides data on the economic standing of village households by type of land tenure. All the sampled village households are classified as landlords, farmers, or laborers; and farmers are further divided into A, B, and C by type of land tenure and size of holding. These sub-categories are not always the same throughout the eight villages.

Table 7 summarizes Table 6 in terms of per capita income by type of land tenure and size of holding. It is evident from this table that every village has households of different economic standing; categories A, B, and C are in order, except in Yamani; income is relatively evenly distributed in Tanjong Karang in contrast to the other villages; and finally the differences in income in the traditional villages of Don Daeng and Khok Chyak are as large as those in M12 Kubang Luang and Padang Lalang which have adopted new rice technology with more technology. But Table 7 alone does not disclose groupings by patterns of income distribution among the eight villages. Socio-economic differentiation cannot be properly understood without an investigation of the patterns of economic adaptation of village households by type of land tenure and size of holding.

Adoption of HYVs and double cropping generally results in an increase in the value of the land and in rent, or a change in the rental system, and at the same time requires a more capital intensive method of farm management which further stimulates commercialization of rice cultivation. In other words, higher techno-ecological adaptation creates new economic conditions for peasant farmers, and the trends are irreversible. However, these conditions impose a strain on the economic life of small owner-farmers and tenants.

Table 8 shows patterns of farm expenditure for rice cultivation by type of land tenure. In the villages of Group [I], small owner-farmers and/or tenants tend to spend little on chemicals, maintenance, and hired labor; whereas in all the other villages, they cannot manage in this way and the farmers all spend almost the same percentage on farm expenditures irrespective of land tenure; when the rent is included, small owner-farmers and tenants in these groups are at a disadvantage; for example, in Tanjong Karang tenants spend as much as 75 percent of their gross revenue from paddy, while in Don Daeng farmers in the corresponding category only spend 19 percent of gross revenue on cultivation. Accordingly, in the villages of Groups (II), [III], and [IV], the distribution of income from paddy is not simply the result of land ownership, but includes the disaggregate effect of new technology on the economic standing of different types of farm households (Table 7, in parentheses).

It is generally assumed that the disaggregate effect of new rice technology stimulates polarization of peasant farmers. Since the present material does not allow me to follow the process itself, an attempt will be made to identify some of the trends among peasant farmers of different economic standing.

Table 6-1 Don Daeng—Economic Standings of Village Households by Land Tenure—(annual, 1975/76)

(a) Farm Income

(US\$ per Farm Household)

	Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue							Expenditures	Net Income	
				Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others	Total			
Farmer	A	4	5.68	5.40	454	98	80			8	640	83	557
	B	7	2.51	2.46	251	102	27		16	45	441	50	391
	C	7	1.02	1.35	112		57			8	177	40	137
Whole	18	2.64	2.68		242	62	51		6	22	383	54	329

(b) Household Income

(US\$ per Household)

	Sample	Family Size	Labor Force	Land Owned	Farm Income	Off-Farm Income						Household Income
						Salary	Agricultural Labor	Factory & Other Labor	Trade & Services	Others	Total	
Landlord	—	—	—	—	—	—	—	—	—	—	—	—
Farmer	A	4	5.75	3.38	5.68	557	6	488	3		497	1,054
	B	7	6.86	4.42	2.51	391	20	277			297	688
	C	7	4.43	2.93	1.02	137	10		14		24	161
Laborer	—	—	—	—	—	—	—	—	—	—	—	—
[Others]	—	—	—	—	—	—	—	—	—	—	—	—
Whole	18	5.67	3.61	2.64	329		13	217	6		236	565

A: Owner-Farmer (Large); B: Owner-Farmer (Medium); C: Owner-Farmer (Small)

Table 6-2 Khok Chyak—Economic Standings of Village Households by Land Tenure—(annual, 1975/76)

(US\$ per Farm Household)

		Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue						Expenditures	Net Income	
					Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others			Total
Farmer	A	6	6.46	10.41	1,543	669					2,212	622	1,590
	B	6	2.88	2.80	518	106			24	21	669	90	579
	C	5	0	2.66	281	57	7			3	348	110	238
Whole		17	3.30	5.44	810	291	2		8	8	1,119	284	835

(b) Household Income

(US\$ per Household)

		Samples	Family Size	Labor Force	Land Owned	Farm Income	Off-Farm Income					Household Income	
							Salary	Agricultural Labor	Factory & Other Labor	Trade & Services	Others		Total
Landlord		—	—	—	—	—	—	—	—	—	—	—	
Farmer	A	6	7.33	5.17	6.46	1,590			190		2	192	1,782
	B	6	6.17	4.08	2.88	579		167	430	3		600	1,178
	C	5	6.40	3.20	0	238		49	124			173	411
Laborer		3	6.33	2.67	0	0		8	1,479			1,487	1,487
[Others]		—	—	—	—	—	—	—	—	—	—	—	—
Whole		20	6.60	4.03	2.80	710		13	438	1	1	503	1,213

A: Owner-Farmer-Tenant; B: Owner-Farmer; C: Tenant

Table 6-3 Samkapthong—Economic Standings of Village Households by Land Tenure — (annual, 1975/76)

(a) Farm Income

(US\$ per Farm Household)

		Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue						Expenditures	Net Income	
					Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others			Total
Farmer	A	3	0.59	0.59	149		106			10	265	65	200
	B	5	0.16	2.50	410		64			6	480	217	263
	C	4	0	0.80	178		168			29	375	98	277
		12	0.24	1.27	267		109			15	391	139	252

(b) Household Income

(US\$ per Household)

		Samples	Family Size	Labor Force	Land Owned	Farm Income	Off-Farm Income						Household Income
							Salary	Agricultural Labor	Factory & Other Labor	Trade & Services	Others	Total	
Landlord		4	4.75	1.50	1.59	213	176		393	7		576	789
Farmer	A	3	4.67	2.00	0.59	200	758		26	—		784	985
	B	5	4.80	3.00	0.16	263	118	4	137	65		324	586
	C	4	5.25	2.50	0	277		4	159	20		183	460
Laborer		2	4.59	2.00	0	12			319			319	331
[Others]		—	—	—	—	—	—	—	—	—	—	—	—
Whole		18	4.83	2.28	0.51	217	198	2	200	24		424	641

A: Owner-Farmer; B: Tenant (Large); C: Tenant (Small)

Table 6-4 Yamani —Economic Standings of Village Households by Land Tenure)—(annual, 1975/76)

(a) Farm Income

(US\$ per Farm Household)

		Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue						Expenditures	Net Income	
					Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others			Total
Farmer	A	3	1.99	4.44	2,348		8			5	2,361	736	1,625
	B	5	0.90	1.22	550		17			59	626	245	381
	C	3	0	1.09	650		1			3	654	210	444
Whole		11	0.95	2.07	1,068		10			29	1,107	369	738

(b) Household Income

(US\$ per Household)

	Samples	Family Size	Labor	Owned	Farm Income	Off-Farm Income						Household Income
						Salary	Agricultural Labor	Factory & Other Labor	Trade & Services	Others	Total	
Landlord	2	7.00	2.50	1.92	146			546		79	625	771
Farmer	A	3	5.00	3.00	1.99	1,625			188		188	1,813
	B	5	6.00	3.20	0.90	381		22	311	71	404	785
	C	3	4.33	2.00	0	444		13	448	65	526	970
Laborer	3	5.67	3.67	0	68		152	333	163	7	655	724
[Others]	—	—	—	—	—	—	—	—	—	—	—	—
Whole	16	5.56	2.94	0.89	538		38	347	65	11	461	999

A: Owner-Farmer (Large); B: Owner-Farmer (Small); C: Tenant

Table 6-5 M6. Wangyang —Economic Standings of Village Households by Land Tenure — (annual, 1975/76)

(a) Farm Income

(US\$ per Farm Household)

		Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue						Expenditures	Net Income	
					Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others			Total
Farmer	A	2	6.56	4.00	2,526				231	108	2,865	962	1,903
	B	4	2.40	2.62	1,547		23			216	1,786	593	1,193
	C	5	0.53	2.14	1,118		78			7	1,202	557	645
Whole		12	2.31	2.65	1,529		45		42	101	1,717	644	1,073

(b) Household Income

(US\$ per Household)

		Samples	Family Size	Labor Force	Land Owned	Farm Income	Off-Farm Income						Household Income
							Saraly	Agricultural Labor	Factory & Other Labor	Trade & Services	Others	Total	
Landlord		3	6.00	2.50	11.12	1,326				467		467	1,793
Farmer	A	2	4.00	3.00	6.56	1,903		25				25	1,928
	B	4	4.50	3.38	2.40	1,193		31	12		36	79	1,272
	C	5	5.80	3.40	0.53	645		125	48			162	807
Laborer		2	5.50	3.00	0	0		383	85			468	468
[Others]		[4]	[3.75]	[2.00]	[0]	[190]			[2]	[1,429]	[148]	[1,579]	[1,769]
Whole		16	5.25	2.97	3.67	986		98	25	88	9	220	1,206

A: Owner-Farmer-Landlord; B: Owner-Farmer; C: Tenant

Table 6-6 M12. Kubang Luang —Economic Standings of Village Households by Land Tenure— (annual, 1975/76)

(a) Farm Income

(US\$ per Farm Household)

	Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue							Expenditures	Net Income	
				Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others	Total			
Farmer	A	1	21.68	9.60	3,824		274		544	294	4,936	1,030	3,906
	B	7	0.54	10.80	4,219		22			119	4,360	1,854	2,506
	C	4	0	2.60	977						977	444	533
Whole	12	2.12	7.98	3,105		36		45	94	3,280	1,315	1,965	

(b) Household Income

(US\$ per Household)

		Samples	Family Size	Labor Force	Land Owned	Farm Income	Off-Farm Income						Household Income
							Salary	Agricultural Labor	Factory & Other Labor	Trade & Services	Others	Total	
Landlord		1	2.00	2.00	14.04	1,091						0	1,091
Farmer	A	1	6.00	4.00	21.68	3,906		34				34	3,940
	B	7	8.00	4.57	0.54	2,506		17	393	7		417	2,923
	C	4	5.25	3.25	0	533		123	59			182	715
Laborer		2	6.50	2.00	0	0		96	824	58		978	978
[Others]		[2]	[5.00]	[2.00]	[0]	[149]				[815]		[815]	[964]
Whole		15	6.53	3.67	2.63	1,645		56	309	11		376	2,021

A: Owner-Farmer-Landlord; B: Tenant (Large); C: Tenant (Small)

Table 6-7 Padding Lalang—Economic Standings of Village Households by Land Tenure—(annual, 1975/75)

(a) Farm Income

(US\$ per Farm Household)

	Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue							Expenditures	Net Income	
				Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others	Total			
Farmer	A	3	7.05	3.64	6,217				878	460	7,555	2,479	5,076
	B	9	1.45	2.25	3,746				33	280	4,059	1,411	2,648
	C	11	0.23	0.60	839					5	840	304	540
Whole	23	1.60	1.64	2,678					127	172	2,977	1,021	1,956

(b) Household Income

(US\$ per Household)

	Samples	Family Size	Labor Force	Land Owned	Farm Income	Off-Farm Income						Household Income
						Salary	Agricultural Labor	Factory & Other Labor	Trad & Services	Others	Total	
Landlord	—	—	—	—	—	—	—	—	—	—	—	—
Farmer	A	3	6.00	3.67	7.05	5,076					0	5,076
	B	9	6.00	3.56	1.45	2,648	420	73	21	22	536	3,184
	C	11	5.27	3.27	0.23	540		335	83	149	567	1,107
Laborer	5	4.80	2.60	0	0		154	207	335	4	700	700
[Others]	—	—	—	—	—	—	—	—	—	—	—	—
Whole	28	5.50	3.29	1.31	1,607	135	183	76	125	1	520	2,127

A: Owner-Farmer-Landlord; B: Owner-Farmer (Large); C: Owner-Farmer (Small) and Tenant

Table 6-8 Tanjung Karang—Economic Standings of Village Households by Land Tenure—(annual, 1975/76)

(a) Farm Income

(US\$ per Farm Household)

		Samples	Ownership (ha.)	Holding (ha.)	Gross Revenue						Expenditures	Net Income	
					Rice	Upland Crops	Vegetables & Fruits	Tree Crops	Rent	Others			Total
Farmer	A	20	2.98	3.07	1,230		3	179		41	1,453	465	988
	B	13	1.60	1.60	542		8	266		35	851	245	606
	C	6	1.68	2.29	529			235		74	838	398	440
Whole		39	2.32	2.46	893		4	216		44	1,157	381	776

(b) Household Income

(US\$ per Household)

	Samples	Family Size	Labor Force	Land Owned	Farm Income	Off-Farm Income						Household Income	
						Salary	Agricultural Labor	Factory & Other Labor	Trade & Services	Others	Total		
Landlord	—	—	—	—	—	—	—	—	—	—	—	—	
Farmer	A	20	5.70	3.15	2.98	988		369	191	14	7	581	1,569
	B	13	4.92	2.46	1.60	606		243	177	63		483	1,089
	C	6	6.00	2.00	1.68	404		650		39		689	1,129
Laborer	—	—	—	—	—	—	—	—	—	—	—	—	—
[Others]	—	—	—	—	—	—	—	—	—	—	—	—	—
Whole	39	5.49	2.77	2.32	776		369	157	35	4	565	1,341	

A: Owner-Farmer (Large); B: Owner-Farmer (Small); C: Tenant

Table 7 Per Capita Income by Types of Land—Villages in Thailand and Malaysia—(annual, 1975/76)

(US\$)

	Don Daeng	Khok Chyak	Samkapthong	Yamani	M6. Wangyang	M12. Kubang Luang	Padang Lalang	Tanjong Karang
	—	—	166	110	299	546	—	—
Farmer*	A	183 (69)	243 (157)	211 (19)	363 (325)	482 (406)	657 (466)	846 (623)
	B	100 (34)	191 (72)	122 (48)	131 (54)	283 (259)	365 (309)	531 (390)
	C	36 (21)	64 (30)	88 (16)	224 (102)	139 (104)	136 (102)	210 (102)
Laborer	—	235	74	128	85	150	146	—
[Others]	—	—	—	—	[472]	[193]	—	—
Whole	100	184	133	180	230	309	386	244

* See note on Table 6-1 to 6-8.

Figures in parentheses indicate net income from paddy only.

Table 8 Patterns of Expenditures in Rice Cultivation—Villages in Thailand and Malaysia—(annual, 1975/76)

(percentage to gross revenue from paddy)

	Don Daeng			Khok Chyak			Samkapthong			Yamani			M6. Wangyang			M12. Kubang Luang			Padang Lalang			Tanjong Karang			
	I	R	T	I	R	T	I	R	T	I	R	T	I	R	T	I	R	T	I	R	T	I	R	T	
Farmer*	A	13	0	13	22	0	25	40	0	41	26	0	31	35	0	36	25	0	27	37	1	40	30	1	38
	B	6	0	6	12	0	14	24	20	44	29	8	41	24	0	25	29	12	42	31	6	38	37	0	45
	C	0	19	19	5	27	32	10	34	53	24	4	32	29	16	46	29	16	45	29	6	36	45	17	75
Whole	9	3	11	18	5	24	23	22	46	27	5	33	29	5	35	29	11	40	33	5	38	33	1	43	

* See note on Table 6-1 to 6-8.

I: expenditures in chemicals, maintenance, & hired labor; R: rent; T: total expenditures in rice cultivation.

As mentioned, Samkaphong, Group [II], and Yamani and Tanjong Karang in Group [III] remain at a semi-commercial level of rice cultivation, and the aggregate effect of new technology in these villages appears smaller than in M6 Wangyang in Group [III] and 12 Kubang Luang and Padang Lalang in Group [IV] which have developed commercial rice cultivation.

Of the three semi-commercial villages of Groups [II] and [III] and Yamani have undergone rapid change through the impact of the urban and industrial sector. Thus a large number of part-time farmers are found in almost every category of farm household (Table 9); and this trend is so definite that it permits one to assume a process of "de-farming" in these villages; the exception being the large owner-farmers of Yamani who engage in rice cultivation as full-time farmers. It is these farmers who have been benefited from the new rice technology. In Tanjong Karang urbanization has had less of a polarizing effect on the villagers' livelihood. In this village, although distribution of land ownership is relatively even, about half of the farm households derive some benefit from new rice technology and harvest more than they consume; while the other half, who are small owner-farmers and tenants, produce only what they consume or less. This disaggregate effect is mitigated largely by income from tree crops and agricultural labor (Table 6 - 8). It is to be noted that tenants, who constitute only 15 percent of the sample farm households, draw half of their household income from agricultural labor; they are agricultural workers.

M6 Wangyang of Group [III] and M12 Kubang Luang and Padang Lalang of Group [IV] practice commercial rice cultivation. Most of the farmers depend for their income primarily on rice production, and urbanization has not much affected their economic activities in spite of its general influence on rural life. But Thailand and Malaysia display different features of disaggregate effect. In Padang Lalang as in other villages, owner-farmer landlords and large owner-farmers benefit the most from new rice technology (Table 7, in parentheses). A small gap is discernible between this category and that of small owner-farmers and tenants, who make up 48 percent of the sample farm households. And as in Tanjong Karang, these peasant farmers depend mostly on agricultural labor for a living, although it contributes only 30 percent to household income. However, despite their unfavorable economic standing, it appears that they have not accumulated debts.

Tenants in both M6 Wangyang and M12 Kubang Luang in Thailand definitely show signs of accumulation of debt, since their outstanding debts are almost twice as high as the sums of money they borrowed during the past year.¹⁴⁾ Owner-farmer landlords and owner-farmers show no accumulation of debt, and are firmly established as full-time rice-growing farmers. M12 Kubang Luang is more problematic because

14) The average debt outstanding amounts to US\$ 828 for large tenants, and US\$ 406 for small tenants, in M12 Kubang Luang; and US\$ 611 for tenants in M6 Wangyang.

Table 9 Patterns of Income Resources of Village Households—Villages in Thailand and Malaysia—(annual, 1975/76)

	Don Daeng			Khok Chyak			Samkaphong			Yamani			M6. Wangyang			M12. Kubang Luang			Padang Lalang			Tanjong Karang			
	RC	OF	NF	RC	OF	NF	RC	OF	NF	RC	OF	NF	RC	OF	NF	RC	OF	NF	RC	OF	NF	RC	OF	NF	
Landlord	—	—	—	—	—	—	16	11	73	20	0	80	31	43	26	53	47	0	—	—	—	—	—	—	
Farmer*	A	38	15	47	64	25	11	9	11	80	90	0	10	85	14	1	71	28	1	74	26	0	49	14	37
	B	34	23	43	38	11	51	39	6	55	42	7	51	92	2	6	85	1	14	73	10	17	28	28	44
	C	56	29	15	47	11	42	18	42	40	45	1	54	74	6	20	75	0	25	48	1	51	12	27	61
Laborer	—	—	—	0	0	100	0	4	96	0	10	90	0	0	100	0	0	100	0	0	100	—	—	—	
[Others]	—	—	—	—	—	—	—	—	—	—	—	—	[0	11	89]	[0	15	85]	—	—	—	—	—	—	
Whole	38	20	41	43	15	42	15	19	66	49	5	46	57	25	18	73	8	19	64	12	24	38	20	42	

* See note on Table 6-1 to 6-8.

RC: rice cultivation; OF: other farming activities; NF: non-farming activities

[conversion Rate]

1 rai	—0.160 ha.	100 ha.—625.000rai	1 thang	—10kg. (paddy)	100 ton—10.000 thang (paddy)
1 relang	—0.287 ha.	100 ha.—348.432 relong	1 kunca	—385.56 kg. (paddy)	100 ton—259.363 kunca (paddy)
1 acre	—0.404 ha.	100 ha.—247.525 acres	1 pickul	—60.48 kg. (paddy)	100 ton—1,653.439 pickul (paddy)
			1 lb.	—0.4536 kg.	100 ton—220,458.553 lb.

US\$ 1— 20.04 (1975/76) ₤ 1.000—US\$ 49.020 (1975/76)

US\$ 1— 2.54 (1975/76) M\$ 1,000—US\$ 393.701 (1975/76)

of the high tenancy rate; eleven of the twelve sample farm households are tenants (Table 6-6). In other words, the whole village suffers from a disaggregate effect; if not one has to assume an extremely high level of consumption. Thus, although this village has a comparatively high per capita income, it is likely that the lives of these farmers are not easy.

Finally, the disaggregate effect does not apply to Don Daeng and Khok Chyak in Group [I]. Different economic standings and socio-economic differentiation in these villages must be discussed in the context of family cycle, land fragmentation, and access to non-agricultural work and urban employment.

V Overview

The foregoing comparative descriptions of eight villages chosen on the basis of physical environment provide common denominators for the analysis of the socio-economic conditions of peasant communities. The major items are techno-ecological adaptation and land productivity, the aggregate effect of new rice technology and its contribution to household income, patterns of economic adaptation and different economic standings by land tenure, and the disaggregate effect which stimulates socio-economic differentiation.

It is evident that higher techno-ecological adaptation results in higher yield and productivity, and is likely to bring about an increase of household income. But the effect on household income depends greatly on the size of land holding, and besides, household income derives not only from rice cultivation but also from other farming and non-farming activities. Thus, the larger the landholding, the more visible is the aggregate effect of new rice technology. However, this creates new economic conditions, to which peasant farmers adapt themselves. These conditions impose a strain on the economic adaptation of tenants and small owner-farmers, who benefit less from new rice technology than large owner-farmers and owner-farmer landlords. The disaggregate effect aggravates socio-economic differentiation among peasant farmers, although it may be mitigated by other sources of income. Thus, as has been shown in the sample villages, the aggregate and disaggregate effect of new techno-ecological adaptation may differ, depending on conditions in a particular village.

This analysis raises the question of the implication of socio-economic differentiation in the traditional pattern of organization. The Thai mode of organization has been summarized by the term of figure-focal "entourage system."¹⁵⁾ And it seems that this concept is also applicable to Malay peasant communities. The effect of

15) Lucien Hanks, "The Corporation and the Entourage," *Catalyst* No. 2, 1966. According to Potter, "an entourage is a hierarchically organized group in which a number of subordinates support a leader who holds their allegiance by successfully advancing their interests", see Jack M. Potter: *Thai Peasant Social Structure* (Chicago: University of Chicago Press, 1976.)

socio-economic change the traditional mode of organization constitutes an interesting problem in the social aspects of rural development, but is beyond the limits of the present paper.